Why do we trust new technology? A study of initial trust formation with organizational information systems

Xin Li [a,*], Traci J. Hess [b], Joseph S. Valacich [b]

[a] *Accounting and Information Technology, University of North Carolina at Pembroke, P.O. Box 1510, Pembroke, NC 28372, United States*
[b] *Department of Information Systems, Washington State University, P.O. Box 644743, Pullman, WA 99164-4743, United States*

Abstract

Recent trust research in the information systems (IS) field has described trust as a primary predictor of technology usage and a fundamental construct for understanding user perceptions of technology. Initial trust formation is particularly relevant in an IS context, as users must overcome perceptions of risk and uncertainty before using a novel technology. With initial trust in a more complex, organizational information system, there are a number of external determinants, trusting bases, that may explain trust formation and provide organizations with the needed levers to form or change individuals' initial trust in technology. In this study, a research model of initial trust formation is developed and includes trusting bases, trusting beliefs, trusting attitude and subjective norm, and trusting intentions. Eight trusting base factors are assessed including personality, cognitive, calculative, and both technology and organizational factors of the institutional base. The model is empirically tested with 443 subjects in the context of initial trust in a national identity system (NID). The proposed model was supported and the results indicate that subjective norm and the cognitive–reputation, calculative, and organizational situational normality base factors significantly influence initial trusting beliefs and other downstream trust constructs. Factors from some of the more commonly investigated bases, personality and technology institutional, did not significantly affect trusting beliefs. The findings have strategic implications for agencies implementing e-government systems and organizational information systems in general.
Published by Elsevier B.V.

Keywords: Initial trust; Technology adoption; Trusting intention; Trusting beliefs; Subjective norm; Trusting attitude; Trusting bases; e-Government; Organizational information systems; National identity systems

1. Introduction

Recent information systems research indicates that trust plays an important role in helping users overcome perceptions of risk and uncertainty in the use and acceptance of new technology (Gefen et al., 2003; Pavlou and Gefen, 2004). Numerous studies have investigated the influence of trust on perceptions and/or use of tech-

nology in various contexts including eCommerce (Jarvenpaa and Todd, 1997; McKnight et al., 2002a; Pavlou, 2003), online marketplaces (Pavlou and Gefen, 2004), and recommendation agents (Komiak and Benbasat, 2006). This research suggests that understanding how initial trust toward an information system is formed is essential for promoting the adoption of a new system.

Research on technology adoption and innovation has noted that the determinants of initial adoption differ from the determinants of continued use (Agarwal and Prasad, 1997; Chin and Marcolin, 2001; Karahanna et al., 1999). The adoption literature suggests a strong relationship between users' pre-implementation expectations of a new system and post-implementation experiences with the system (Ginzberg, 1981; Staples et al., 2002). From a diffusion of innovations perspective, users initially seek or are provided with information about an innovation which forms their attitude toward the innovation and subsequent adoption decision (Rogers, 1995). The decision to readily adopt a new technology is influenced by users' initial perceptions of the technology characteristics (Moore and Benbasat, 1991; Rogers, 1983), and users "will be less likely to experiment with new technologies if they perceive a significant risk associated with such exploration..." (Agarwal and Prasad, 1997). This initial exposure to a system is also said to be a time of importance as this is when adaptation of the system and user learning is most likely to occur (Tyre and Orlikowski, 1994; Weick, 1990). In the context of organizational systems, adoption research has also found that in the early stages of technology adoption, indirect information such as perceptions of the organizational sponsor, organizational structure, and social influence will have the greatest influence on adoption decisions (Gallivan, 2001).

This perspective on initial adoption of technology aligns with research on initial trust. While trust is a dynamic concept that develops over time, researchers have noted the importance of studying initial trust, especially in cases of novel technology where users must overcome perceptions of risk and uncertainty before using the technology (McKnight et al., 2002b; Wang and Benbasat, 2005). Trust research in organizational contexts has demonstrated that individuals form trusting beliefs prior to having first-hand experience with another party and that high levels of initial trust exist (Berg et al., 1995; Kramer, 1994) and thus may be cultivated. The determinants of initial trust are believed to differ from the determinants of trust with a more familiar party (Gefen, 2004; McKnight et al., 2002a), as individuals do not have direct experiences to draw upon in forming initial trusting beliefs. Research on initial trust is also relevant to later trust with a familiar party as all trusting relationships have a starting point (a beginning), and influential events often occur at the beginning of a relationship that may affect the continuance and/or later phases of a relationship (McKnight and Chervany, 2006). In the context of IS trust, organizations have an opportunity to create a positive, first impression of a new system and generate high levels of trust with users before they interact with the system.

In order for organizations to take advantage of the opportunity to create a trustworthy first impression of a new system and encourage adoption, the relevant determinants of trusting behaviors in the context of initial IS use need to be studied. McKnight et al. (2002a) developed and tested a model of initial trust in an IS context based on the theory of reasoned action (TRA) (Ajzen and Fishbein, 1980). Their model included two trusting bases as external determinants (personality and institutional), trusting beliefs, and trusting intentions. This model provides a parsimonious, essential starting point for studies of initial IS trust.

Ajzen and Fishbein (1980) suggest that to better understand a behavior or the intention to perform a behavior, it is important to develop a thorough understanding of the underlying external variables in the behavioral context. The organizational trust literature suggests several theoretically-grounded trusting bases, such as cognitive, calculative, institutional, and personality, that may influence initial trusting beliefs (Mayer et al., 1995; Rousseau et al., 1998). Studies of IS-related trust have investigated only a subset of these trusting bases, and the object of trust in these studies (the trustee) has ranged from virtual team members to web vendors and online sellers. The operationalization of trusting beliefs and intentions has also varied across IS trust studies, and recent empirical research provides evidence that more parsimonious, one-dimensional representations may produce erroneous results (Serva et al., 2005). While many advances have been made in IS-related trust, there is still much to be learned about the determinants of initial trust in information systems.

The objective of this research is to provide insight on how to build trust in new technology prior to actual use of the technology. An empirical investigation on the formation of initial trust toward an organizational information system is conducted using a research model of trusting bases, trusting beliefs, trusting attitudes and subjective norm, and trusting intentions. Eight trusting base factors are assessed including personality, cognitive, calculative, and both technology and organizational factors of the institutional base. The model